Scientific Inquiry

6-1 The student will demonstrate an understanding of technological design and scientific inquiry, including the process skills, mathematical thinking, controlled investigative design and analysis, and problem solving.

6-1.3 Classify organisms, objects, and materials according to their physical characteristics by using a dichotomous key.

Taxonomy Level: 2.3-C Understand Procedural Knowledge

Previous/Future knowledge: In 1st grade (1-1.1), students compared, classified, and sequenced objects by number, shape, texture, size, color, and motion, using Standard English units of measurement where appropriate. In 3rd grade, students classified objects by two of their properties (attributes) (3-1.1) and classified objects or events in sequential order (3-1.2). They will use this skill throughout the remainder of their science instruction.

It is essential for students to know scientists use the skill of classifying to organize objects that are similar in some way into groups to make the relationship among them easier to understand. Objects can be classified based on similar characteristics using a binary classification chart (based on whether or not an object has or does not have a particular property) or an identification key.

A *dichotomous key* is a special identification key that uses a series of paired characteristics that leads to the identification of an organism, object, or material.

- Always begin with a choice from the first pair of characteristics.
- At the end of each characteristic is either the name of the organism, object, or material or directions to go to another step.
- Keep following the choices until the identity is determined.
- Once the identity is determined, the physical characteristics can be identified.

It is not essential for students to construct dichotomous keys.

Assessment Guidelines:

The objective of this indicator is to *classify* organisms, objects, and materials using a dichotomous key; therefore, the primary focus of assessment should be to determine the identity of an organism, object, or material by following a dichotomous key. However, appropriate assessments should also require students to *compare* the properties of organisms, objects, and materials using a dichotomous key; *identify* the name of an organism or object using a dichotomous key; or *recognize* the physical characteristics of an organism or object based on the dichotomous key.